Idaho State K~8 Mathematics Standards

Introduction

The K-8 mathematics standards and curriculum expect our students to achieve the following objectives:

1. Understand relationships and concepts of Numbers, Units, and Spatial Senses.
2. Develop basic knowledge of Mathematics for daily lives.
3. Develop the capability of forming mathematical questions and solving mathematical problems.
4. Develop the capability of using Mathematics to express ideas accurately and concretely and also communicate reasonably and intelligently.
5. Develop the capability of criticizing and analyzing.
6. Develop the capability of appreciating the beauty of Mathematics.

In order to accomplish these objectives, the development of the Mathematics curriculum should focus on students' daily lives, and also match up with the procedures of their physical and mental developments and the development of diverse thinking types. By considering various learning ways that are appropriate for their abilities and interests, educators can develop multiple mathematical learning activities. Moreover, mathematical learning activities should provide equal opportunities for all students to participate and discuss actively, brainstorm effectively, promote creativities, express ideas precisely, and also enhance the capability of reasonable judgments, thinking models, and communications. As expected, students can establish mathematical knowledge according to the interactions with the society (community).

According to the characteristics of thinking models, the content of Mathematics is divided into five categories (topics), Numbers and Units, Geometry, Statistics, Algebra, and Connections, and also by grade levels (K~8). The coding system for the standards of the first four categories consists of three codes. The first code represents the topic of the content, which uses

the alphabet N, G, S, and A to represent “Numbers and Units”, “Geometry”, “Statistics”, and “Algebra” respectively. The second code represents the grade level, K to 8. The third code shows both the sequences of the standards under every category and the amount of the standards in it. In addition to those four topics above, the fifth topic is “Connections”. The internal connections of Mathematics, which go throughout the first four categories, emphasize the development of problem solving skills. The external connections of Mathematics focus on the interactions with students’ daily lives and mathematical questions among all other subjects, which emphasize the development of the ability of realization, transformation, problem solving, communication, evaluation, and analysis. By possessing these abilities, students can not only apply Mathematics broadly and then enhance the quality of daily lives but also strengthen their mathematical thinking and assist further developments in the future career. Additionally, the abilities for Connections should be developed associated with abilities of other four topics. Consequently, the ability of Connections will become stronger in the upper grade levels. The coding system for the topic “Connections” is composed of three codes. The first one uses the alphabet “C” for “Connections”, the second one is for the grade level (K~8), and the last one shows the amount of standards in this topic but no sequence.

Contact Information

Yu-Liang (Aldy) Chang

Teaching & Research Assistant (Doctoral Student)

College of Education, University of Idaho, Moscow, ID

Email: chan7602@uidaho.edu

Phone #: 208-301-2304

Grade K Math Standards

I. Numbers & Units:

(1). Numbers & Computations:

N-K-1. Demonstrate knowledge of our numeration system by counting in a variety of ways.

N-K-2. Demonstrate an understanding of the verbal, symbolic, and physical representations of a number.

N-K-3. Identify a penny as a value of money.

N-K-4. Explore the concepts of addition and subtraction using concrete objects.

N-K-5. Use estimation to identify a number of objects.

N-K-6. Evaluate the reasonableness of an answer.

(2). Units & Measurements:

N-K-7. Explore the use of standard and non-standard tools for measuring time, length, volume, weight, and temperature.

N-K-8. Apply estimation of measurement to real-world and content problems using actual measuring devices.

II. Geometry:

G-K-1. Recognize, name, build, draw, compare, and sort two- and tree-dimensional shapes.

G-K-2. Recognize and create shapes that have symmetry.

G-K-3. Explore slides, flips, and turns.

G-K-4. Apply ideas about direction and distance.

III. Statistics:

S-K-1. Interpret information from real objects and simple pictographs.

S-K-2. Create a graph using real objects or pictorial representations.

S-K-3. Predict and perform results of simple probability experiments.

S-K-4. Make predictions or decisions based on probable results or past experiences.

IV. Algebra:

A-K-1. Compare sets of objects using vocabulary (less than, greater than, and same as).

A-K-2. Explore the relationship between addition and subtraction.

A-K-3. Replicate and extend patterns and identify the rule (function) that creates the pattern.

A-K-4. Sort and classify objects by attributes.

V. Connections:

(1). Realization:

C-K-1. Use appropriate vocabulary of Computation.

C-K-2. Use appropriate vocabulary of Measurement.

C-K-3. Use appropriate vocabulary of Estimate.

C-K-4. Understand and apply appropriate vocabulary for position and size.

C-K-5. Understand and use appropriate vocabulary of Data Analysis.

C-K-6. Understand and use appropriate vocabulary of Functions.

(2). Transformation:

C-K-7. Select appropriate methods to represent mathematical ideas.

(3). Communication:

C-K-8. Use appropriate vocabulary to communicate mathematical information.

(4). Problem Solving:

C-K-9. Use concrete objects to identify and show a solution to problems.

C-K-10. Select strategies appropriate to solve a problem.

1st Grade Math Standards

I. Numbers & Units:

(1). Numbers & Computations:

N-1-1. Demonstrate knowledge of our numeration system by counting in a variety of ways.
N-1-2. Read, write order, and compare whole numbers to 100.
N-1-3. Demonstrate the knowledge of place value through 99.
N-1-4. Identify and state the value of pennies, nickels, and dimes.
N-1-5. Demonstrate proficiency of addition up to 10 and an understanding of subtraction from 9.
N-1-6. Select and use appropriate operations.
N-1-7. Use estimation to identify a number of objects.
N-1-8. Use estimation to predict computation results.
N-1-9. Evaluate the reasonableness of an answer.

(2). Units & Measurements:

N-1-10. Explore the use of standard and non-standard tools for measuring time, length, volume, weight, and temperature.
N-1-11. Apply estimation of measurement to real-world and content problems using actual measuring devices.
N-1-12. Use a calendar to explore measurement of time.

II. Geometry:

G-1-1. Recognize, name, build, draw, compare, and sort two- and tree-dimensional shapes.
G-1-2. Recognize and create shapes that have symmetry.
G-1-3. Explore slides, flips, and turns.
G-1-4. Apply ideas about direction and distance.

III. Statistics:

S-1-1. Interpret information found in simple graphs to answer questions.
S-1-2. Gather and display data in graphs in order to answer a question.
S-1-3. Predict, perform, and record results of simple probability experiments.
S-1-4. Make predictions or decisions based on probable results or past experiences.

IV. Algebra:

A-1-1. Represent vertical notation in horizontal form.
A-1-2. Compare numbers using vocabulary (less than, greater than, and equal to, more, less, same, fewer, bigger, smaller).
A-1-3. Explore the relationship between addition and subtraction and demonstrate reversal

of operations.

A-1-4. Explore and use the commutative property of addition.

A-1-5. Write a number sentence given an addition or subtraction problem.

A-1-6. Extend patterns and identify the rule (function) that creates the pattern.

A-1-7. Sort and classify objects by more than on attribute.

V. Connections:

(1). Realization:

C-1-1. Use appropriate vocabulary of Computation.

C-1-2. Use appropriate vocabulary of Measurement.

C-1-3. Use appropriate vocabulary of Estimate.

C-1-4. Understand appropriate vocabulary of Geometry.

C-1-5. Understand and use appropriate vocabulary of Data Analysis.

C-1-6. Understand and use appropriate vocabulary of Functions.

(2). Transformation:

C-1-7. Select appropriate methods to represent mathematical ideas.

(3). Communication:

C-1-8. Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to communicate mathematical information.

C-1-9. Use appropriate vocabulary to communicate mathematical information.

(4). Problem Solving:

C-1-10. Draw a picture and generate a number sentence from a problem-solving situation.

C-1-11. Select strategies appropriate to solve a problem.

2nd Grade Math Standards

I. Numbers & Units:

(1). Numbers & Computations:

N-2-1. Demonstrate knowledge of our numeration system by counting in a variety of ways.
N-2-2. Read, write order, and compare whole numbers to 1,000.
N-2-3. Demonstrate the knowledge of place value through 999.
N-2-4. Explore decimals using money through hundredths.
N-2-5. Determine, by counting, the value of a collection of pennies, nickels, dimes, and quarters up to $1.00.
N-2-6. Demonstrate proficiency with addition and subtraction facts through 18.
N-2-7. Add whole numbers with and without regrouping through 99.
N-2-8. Add a series of 1-digit addends.
N-2-9. Explore double digit subtraction of whole numbers with regrouping through 99.
N-2-10. Select and use appropriate operations.
N-2-11. Use estimation to predict computation results.
N-2-12. Evaluate the reasonableness of an answer.

(2). Units & Measurements:

N-2-13. Explore the use of standard and non-standard tools for measuring time, length, volume, weight, and temperature.
N-2-14. Apply estimation of measurement to real-world and content problems using actual measuring devices.
N-2-15. Tell time using both digital and analog clocks to the quarter hour.
N-2-16. Explore the relationship among units of time.

II. Geometry:

G-2-1. Recognize, name, build, draw, compare, and sort two- and tree-dimensional shapes.
G-2-2. Recognize and create shapes that have symmetry.
G-2-3. Explore slides, flips, and turns.
G-2-4. Apply ideas about direction and distance.

III. Statistics:

S-2-1. Interpret information found in simple tables, charts, and graphs.
S-2-2. Gather and display data in tables, charts, and graphs in order to answer a question.
S-2-3. Predict, perform, and record results of simple probability experiments.
S-2-4. Make predictions or decisions based on probable results or past experiences.

IV. Algebra:

A-2-1. Represent vertical notation in horizontal form.
A-2-2. Compare numbers using vocabulary (less than, greater than, and equal to) and symbols (<, >, =).
A-2-3. Explore and use the commutative property of addition.
A-2-4. Understand relationship between addition and subtraction and demonstrate reversal of operations.
A-2-5. Write a number sentence given an addition or subtraction problem.
A-2-6. Extend patterns and identify the rule (function) that creates the pattern.
A-2-7. Sort and classify objects by more than on attribute.

V. Connections:

(1). Realization:

C-2-1. Understand and apply appropriate vocabulary of Numbers.
C-2-2. Use appropriate vocabulary of Computation.
C-2-3. Use appropriate vocabulary of Measurement.
C-2-4. Use appropriate vocabulary of Estimate.
C-2-5. Understand appropriate vocabulary of Geometry.
C-2-6. Understand and use appropriate vocabulary of Data Analysis.
C-2-7. Understand and use appropriate vocabulary of Functions.

(2). Transformation:

C-2-8. Select appropriate methods to represent mathematical ideas.

(3). Communication:

C-2-9. Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to communicate mathematical information.
C-2-10. Use appropriate vocabulary to communicate mathematical information.

(4). Problem Solving:

C-2-11. Generate a number sentence from a problem-solving situation.
C-2-12. Select strategies appropriate to solve a problem.

3rd Grade Math Standards

I. Numbers & Units:

(1). Numbers & Computations:

N-3-1. Read, write order, and compare whole numbers to 10,000.
N-3-2. Demonstrate the knowledge of place value through 9,999.
N-3-3. Explore decimals using money through hundredths.
N-3-4. Determine, by counting, the value of a collection of bills and coins up to $10.00.
N-3-5. Use concrete materials to recognize and represent commonly used fractions.
N-3-6. Instantly recall basic addition and subtraction facts through 18.
N-3-7. Add and subtract whole numbers with and without regrouping through 999.
N-3-8. Add three addends with 1 and 2 digits.
N-3-9. Multiply whole numbers through 10×10.
N-3-10. Explore the relationship between multiplication and division.
N-3-11. Select and use an appropriate method of computation from mental math, paper and pencil, calculator or a combination of the 3.
N-3-12. Select and use appropriate operations.
N-3-13. Use estimation to predict computation results.
N-3-14. Evaluate the reasonableness of an answer.
N-3-15. Make predictions and decisions based on information.

(2). Units & Measurements:

N-3-16. Select and use appropriate units and tools to make formal measurements in both systems (time, length, temperature, perimeter).
N-3-17. Apply estimation of measurement to real-world and content problems using actual measuring devices.
N-3-18. Explore relationships within the metric system.
N-3-19. Tell time using both digital and analog clocks, using 5-minute intervals.
N-3-20. Explore the relationship among units of time.

II. Geometry:

G-3-1. Identify, compare, and analyze attributes of two- and three-dimensional shapes and develop vocabulary of describe the attributes.
G-3-2. Explore congruence, similarity, and symmetry.
G-3-3. Predict and describe the results of sliding, flipping, and turning two-dimensional shapes.
G-3-4. Investigate perimeters in real-world situations.
G-3-5. Apply ideas about direction and distance.

III. Statistics:

S-3-1. Interpret information found in simple tables, charts, and graphs.

S-3-2. Explain and justify conclusions drawn from tables, charts, and graphs.

S-3-3. Collect, organize, and display data in tables, charts, or graphs in order to answer a question and/or test a hypothesis.

S-3-4. Predict, perform, and record results of simple probability experiments.

S-3-5. Make predictions or decisions based on probable results or past experiences.

IV. Algebra:

A-3-1. Represent vertical notation in horizontal form.

A-3-2. Use symbols (<, >, =) to express relationships.

A-3-3. Explore and use the commutative property of addition and multiplication.

A-3-4. Explore inverse (reversal) of operations with multiplication and division.

A-3-5. Write a number sentence using symbols (boxes or letters) to represent an unknown number.

A-3-6. Solve missing addends and missing factor problems using inverse operations.

A-3-7. Extend patterns and identify the rule (function) that creates the pattern.

A-3-8. Discover, describe, and extend patterns by using manipulatives and pictorial representations.

V. Connections:

(1). Realization:

C-3-1. Understand and apply appropriate vocabulary of Numbers.

C-3-2. Use appropriate vocabulary of Computation.

C-3-3. Use appropriate vocabulary of Measurement.

C-3-4. Use appropriate vocabulary of Estimate.

C-3-5. Understand appropriate vocabulary of Geometry.

C-3-6. Understand and use appropriate vocabulary of Data Analysis.

C-3-7. Understand and use appropriate vocabulary of Probability.

C-3-8. Understand and use appropriate vocabulary of Functions.

(2). Transformation:

C-3-9. Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning and concepts.

C-3-10. Select appropriate methods to represent mathematical ideas.

(3). Communication:

C-3-11. Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to communicate mathematical information.

C-3-12. Use appropriate vocabulary to communicate mathematical information.

(4). Problem Solving:

C-3-13. Select strategies appropriate to solve a problem.

C-3-14. Appropriately use a 4-function calculator to solve complex grade-level problems.

4th Grade Math Standards

I. Numbers & Units:

(1). Numbers & Computations:

N-4-1. Read, write order, and compare whole numbers to 1,000,000 commonly used fractions and decimals through hundredths.

N-4-2. Demonstrate and apply the knowledge of whole numbers and decimals place value and patterns of periods (hundredths to millions).

N-4-3. Determine by counting the value of a collection of bills and coins up to $100.00.

N-4-4. Use concrete materials to recognize, represent, and compare commonly used fractions.

N-4-5. Understand decimals with money through hundredths.

N-4-6. Consistently and accurately add and subtract whole numbers.

N-4-7. Add and subtract fractions with like denominators (without requiring simplification).

N-4-8. Add and subtract decimals using money.

N-4-9. Instantly recall multiplication facts through 10s.

N-4-10. Multiply and divide whole numbers.

N-4-11. Use appropriate notations.

N-4-12. Select and use an appropriate method of computation from mental math, paper and pencil, calculator or a combination of the 3.

N-4-13. Select and use appropriate operations.

N-4-14. Use estimation to predict computation results.

N-4-15. Make predictions and decisions based on information.

N-4-16. Evaluate the reasonableness of an answer.

(2). Units & Measurements:

N-4-17. Apply understanding of relationships within the U.S. customary system.

N-4-18. Apply understanding of relationships within the metric system.

N-4-19. Select and use appropriate units and tools to make formal measurements in both systems (time, length, temperature, perimeter, area).

N-4-20. Apply estimation of measurement to real-world and content problems using actual measuring devices.

N-4-21. Tell time using both digital and analog clocks, to the nearest minute.

N-4-22. Apply understanding of relationships to solve real-world problems related to time.

II. Geometry:

G-4-1. Identify, compare, and analyze attributes of two- and three- dimensional shapes and develop vocabulary to describe the attributes.

G-4-2. Predict and describe the results of sliding, flipping, and turning two-dimensional shapes.
G-4-3. Explore relationships among and properties of shapes (congruence, similarities, and symmetry)
G-4-4. Use concrete objects to determine perimeters of triangles, and areas and perimeters of rectangles/squares.
G-4-5. Apply ideas about direction and distance.

III. Statistics:

S-4-1. Read and interpret tables, charts, and graphs.
S-4-2. Explain and justify conclusions drawn from tables, charts, and graphs.
S-4-3. Collect, order, and display data in appropriate notation in tables, charts, and graphs; for example, bar graphs, tally charts and pictographs, in order to answer a question and/or test a hypothesis.
S-4-4. Determine an average (mean) of a set of whole numbers.
S-4-5. Predict, perform, and record results of simple probability experiments.
S-4-6. Make predictions based on simple experimental probabilities.

IV. Algebra:

A-4-1. Represent vertical notation in horizontal form.
A-4-2. Use symbols (<, >, =) to express relationships.
A-4-3. Explore and use the commutative properties of addition and multiplication.
A-4-4. Write a number sentence using symbols (boxes or letters) to represent an unknown number.
A-4-5. Solve missing addends and missing factor problems using inverse operations.
A-4-6. Discover, describe, and extend patterns by using manipulatives and pictorial representations.
A-4-7. Extend and identify the rule (function) that creates the pattern.

V. Connections:

(1). Realization:

C-4-1. Understand and apply appropriate vocabulary of using Numbers.
C-4-2. Use appropriate vocabulary (of Computation).
C-4-3. Use appropriate vocabulary (of measurement).
C-4-4. Use appropriate vocabulary (of Estimate).
C-4-5. Use appropriate vocabulary (of Geometry).
C-4-6. Understand and use appropriate vocabulary (of Data Analysis).
C-4-7. Understand and use appropriate vocabulary (of Probability).

C-4-8. Understand and use appropriate vocabulary (of Function).

(2). Transformation:

C-4-9. Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning and concepts.

C-4-10. Select appropriate methods to represent mathematical ideas.

(3). Communication:

C-4-11. Use appropriate vocabulary to communicate mathematical information.

C-4-12. Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to communicate mathematical information.

(4). Problem Solving:

C-4-13. Select strategies appropriate to solve a problem.

C-4-14. Appropriately use a 4-function calculator to solve complex grade-level problems.

5th Grade Math Standards

I. Numbers & Units:

(1). Numbers & Computations:

N-5-1. Read, write order, and compare whole numbers through billions, commonly used fractions and decimals through hundredths.

N-5-2. Demonstrate and apply the knowledge of whole numbers and decimals place value and patterns of periods (thousandths to billions)

N-5-3. Explore the relationship between equivalent fractions.

N-5-4. Explore the relationship between decimals and simple fractions through thousandths.

N-5-5. Show a sense of magnitudes and relative magnitudes of whole numbers, decimals, and simple fractions.

N-5-6. Explore and apply numbers theory concepts (prime, composite, multiples, and factors).

N-5-7. Instantly recall basic multiplication and division facts up to 10s.

N-5-8. Multiply and divide whole numbers.

N-5-9. Add and subtract fractions with like denominators and simplify as necessary.

N-5-10. Add and subtract decimals through thousandths.

N-5-11. Use appropriate notations.

N-5-12. Evaluate basic numerical expressions that include parentheses.

N-5-13. Select and use an appropriate method of computation from mental math, paper and pencil, calculator or a combination of the 3.

N-5-14. Use estimation to predict computation results.

N-5-15. Recognize when estimation is appropriate and understand the usefulness of an estimate as distinct from an exact answer.

N-5-16. Determine whether a given estimate is an overestimate or underestimate.

N-5-17. Make predictions and decisions based on information.

(2). Units & Measurements:

N-5-18. Select and use appropriate units and tools to make formal measurements in both systems.

N-5-19. Convert unit of measurement within each system.

N-5-20. Apply estimation of measurement to real-world and content problems using actual measuring devices.

N-5-21. Explore the differences and relationships between perimeter and area in both systems.

N-5-22. Solve problems involving length, perimeter, area, weight, mass, and temperature.

N-5-23. Apply understanding of relationships to solve real-world problems related to time.

N-5-24. Understand units and their relationship to one another and to real world applications.

II. Geometry:

G-5-1. Identify, compare, and analyze attributes of two- and three-dimensional shapes and develop vocabulary to describe the attributes.

G-5-2. Explore the fundamental concepts, properties, and relationships among points, lines, rays, angles, and shapes.

G-5-3. Predict and describe the results of sliding, flipping, and turning two-dimensional shapes.

G-5-4. Identify and plot points on a coordinate plane.

G-5-5. Explore congruence, similarities, and symmetry of shapes.

G-5-6. Determine perimeters of polygons and area of rectangles/squares in real-world situations.

III. Statistics:

S-5-1. Read and interpret tables, charts, and graphs.

S-5-2. Explain and justify conclusions drawn from tables, charts, and graphs.

S-5-3. Collect, organize, and display data with appropriate notation in tables, charts, and graphs.

S-5-4. Find measures of central tendency—mean, median, and mode with simple sets of data.

S-5-5. Determine the range of a set of data.

S-5-6. Predict, perform, and record results of simple probability experiments.

S-5-7. Make predictions based on simple experimental probabilities.

IV. Algebra:

A-5-1. Explore and use the commutative properties of addition and multiplication.

A-5-2. Explore and use the following properties as they relate to addition and multiplication: commutative, associative, identity, zero, and inverse.

A-5-3. Investigate the order of operations (parentheses only).

A-5-4. Use symbols (<, >, =) to express relationships.

A-5-5. Explore the meaning and use of variables in simple expressions and

equations.

A-5-6. Translate simple word statements and story problems into algebraic equations.

A-5-7. Solve missing addends and missing factor problems using inverse operations.

A-5-8. Extend patterns and identify a rule (function) that generates the pattern using whole numbers and decimals. Discover, describe, and extend patterns by using manipulatives and pictorial representations.

A-5-9. Use patterns to represent and solve simple problems.

V. Connections:

(1). Realization:

C-5-1. Use appropriate vocabulary (of Computation).

C-5-2. Use appropriate vocabulary (of measurement).

C-5-3. Use appropriate vocabulary (of Estimate).

C-5-4. Use appropriate vocabulary (of Geometry).

C-5-5. Understand and use appropriate vocabulary (of Data Analysis).

C-5-6. Understand and use the language of probability.

C-5-7. Understand and use appropriate vocabulary (of Probability).

C-5-8. Understand and use appropriate vocabulary (of Function).

(2). Transformation:

C-5-9. Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning and concepts.

C-5-10. Select appropriate methods to represent mathematical ideas.

C-5-11. Use mathematical models to show change in real context.

(3). Communication:

C-5-12. Use appropriate vocabulary to communicate mathematical information.

C-5-13. Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to communicate mathematical information.

(4). Problem Solving:

C-5-14. Solve problems using 4 steps process of problem solving (explore, plan, solve, examine).

C-5-15. Apply solutions and strategies to new problem situations.

C-5-16. Use a variety of strategies to compute problems drawn from real-world situations.

C-5-17. Formulate conjectures and discuss why they must be or seem to be

true.

C-5-18. Understand the purpose and capabilities of appropriate technology use as a tool to solve problems.

C-5-19. Use computer applications to display and manipulate data.

6th Grade Math Standards

I. Numbers & Units:

(1). Numbers & Computations:

N-6-1. Read, write, order, and compare whole numbers, fractions, and decimals.

N-6-2. Understand the use of fractions and decimals and their interrelationship.

N-6-3. Show a sense of magnitudes and relative magnitudes of real numbers (whole numbers, fractions, and decimals).

N-6-4. Develop and apply number theory concepts (prime, composite, GCF, LCM, and prime factorization).

N-6-5. Explore the use of integers in real-world situations.

N-6-6. Instantly recall basic multiplication and division facts form 12×12 Times Table.

N-6-7. Consistently and accurately multiply and divide whole numbers.

N-6-8. Add, subtract, multiply, and divide decimals.

N-6-9. Add and subtract fractions with unlike denominators and simplify as necessary.

N-6-10. Explore multiplication and division of fractions.

N-6-11. Use appropriate notations.

N-6-12. Evaluate numerical expressions using the order of operations.

N-6-13. Select and use an appropriate method of computation from mental math, paper and pencil, calculator or a combination of the 3.

N-6-14. Explore the use of exponents.

N-6-15. Expand the use of decimals and fractions to explore the use of percents and ratios.

N-6-16. Explore the use of rates to make indirect measurements.

N-6-17. Explore the use of proportions, ratios, and scales.

N-6-18. Use estimation to predict computation results.

N-6-19. Recognize when estimation is appropriate and understand the usefulness of an estimate as distinct from an exact answer.

N-6-20. Determine whether a given estimate is an overestimate or underestimate.

N-6-21. Make predictions and decisions based on information.

(2). Units & Measurements:

N-6-22. Select and use appropriate units and tools to make formal measurements in both systems.

N-6-23. Convert unit of measurement within each system.
N-6-24. Apply estimation of measurement to real-world and content problems using actual measuring devices.
N-6-25. Recognize the differences and relationships between perimeter and area in both systems.
N-6-26. Solve problems involving length, perimeter, area, weight, mass, and temperature.
N-6-27. Apply understanding of relationships to solve real-world problems related to time.
N-6-28. Understand units and their relationship to one another and to real world applications.

II. Geometry:

G-6-1. Precisely describe, classify, and understand relationships among types of one-, two-, and three-dimensional objects using their defining properties.
G-6-2. Apply fundamental concepts, properties, and relationships among points, lines, angles, and shapes.
G-6-3. Identify and plot points on a coordinate plane.
G-6-4. Construct and measure various angles and shapes using appropriate tools.
G-6-5. Recognize and apply congruence, similarities, and symmetry of shapes.
G-6-6. Explore reflections, translations, and rotations on various shapes.
G-6-7. Develop and apply formulas for perimeter, circumference, and area to triangles, quadrilaterals, and circles.
G-6-8. Explore the relationship between two- and three-dimensional objects.

III. Statistics:

S-6-1. Read and interpret tables, charts, and graphs (line graphs, bar graphs, frequency lines or line plots, circle graphs).
S-6-2. Explain and justify conclusions drawn from tables, charts, and graphs.
S-6-3. Collect, organize, and display data with appropriate notation in tables, charts, and graphs (line graphs, bar graphs, frequency lines or line plots, circle graphs).
S-6-4. Find measures of central tendency—mean, median, and mode with simple sets of data.
S-6-5. Determine the range of a set of data.
S-6-6. Predict, perform, and record results of simple probability experiments.

S-6-7. Make predictions based on simple experimental probabilities.

IV. Algebra:

A-6-1. Explore and use the commutative properties of addition and multiplication.

A-6-2. Explore and use the following properties in evaluating mathematical and algebraic expressions: commutative, associative, identity, zero, inverse, and distributive.

A-6-3. Explore the order of operations.

A-6-4. Use symbols (<, >, =) to express relationships.

A-6-5. Explore the meaning and use of variables in simple expressions and equations.

A-6-6. Translate simple word statements and story problems into algebraic equations.

A-6-7. Solve 1-step equations using inverse operations with whole numbers.

A-6-8. Discover, describe, and extend patterns by using manipulatives and pictorial representations.

A-6-9. Extend patterns and identify a rule (function) that generates the pattern using whole numbers, decimals, and fractions.

A-6-10. Use patterns and functions to represent and solve simple problems.

V. Connections:

(1). Realization:

C-6-1. Use appropriate vocabulary (of Computation).

C-6-2. Use appropriate vocabulary (of measurement).

C-6-3. Use appropriate vocabulary (of Estimate).

C-6-4. Use appropriate vocabulary (of Geometry).

C-6-5. Understand and use appropriate vocabulary (of Data Analysis).

C-6-6. Understand and use the language of probability.

C-6-7. Understand and use appropriate vocabulary (of Probability).

C-6-8. Understand and use appropriate vocabulary (of Function).

(2). Transformation:

C-6-9. Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning and concepts.

C-6-10. Select appropriate methods to represent mathematical ideas.

C-6-11. Use mathematical models to show change in real context.

(3). Communication:

C-6-12. Use appropriate vocabulary to communicate mathematical information.

C-6-13. Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to communicate mathematical information.

(4). Problem Solving:

C-6-14. Solve problems using 4 steps process of problem solving (explore, plan, solve, examine).

C-6-15. Apply solutions and strategies to new problem situations.

C-6-16. Formulate conjectures and discuss why they must be or seem to be true.

C-6-17. Understand the purpose and capabilities of appropriate technology use as a tool to solve problems.

C-6-18. Use computer applications to display and manipulate data.

7th Grade Math Standards

I. Numbers & Units:

(1). Numbers & Computations:

N-7-1. Read, write, order, and compare real numbers (integers, fractions, decimals) and absolute values.

N-7-2. Show a sense of magnitudes and relative magnitudes of real numbers (whole numbers, fractions, decimals).

N-7-3. Develop and display number theory concepts.

N-7-4. Understand the position of rational numbers on a number line.

N-7-5. Add, subtract, multiply, and divide fractions and decimals.

N-7-6. Use appropriate notations.

N-7-7. Explore basic operations with integers.

N-7-8. Evaluate numerical expressions using the order of operations.

N-7-9. Select and use an appropriate method of computation from mental math, paper and pencil, calculator or a combination of the 3.

N-7-10. Use a variety of strategies including common mathematical formulas to compute problems drawn form real-world situations.

N-7-11. Explore the use of exponents.

N-7-12. Expand the use of percents and ratios to solve problems.

N-7-13. Develop the use of rates to make indirect measurements.

N-7-14. Develop the use of proportions, ratios, and scales.

N-7-15. Use estimation to predict computation results.

N-7-16. Recognize when estimate is appropriate and understand the usefulness of an estimate as distinct from an exact answer.

N-7-17. Determine whether a given estimate is an overestimate or underestimate.

N-7-18. Make predictions and decisions based on information.

(2). Units & Measurements:

N-7-19. Select and use appropriate units and tools to make formal measurements in both systems.

N-7-20. Convert unit of measurement within each system.

N-7-21. Apply estimation of measurement to real-world and content problems using actual measuring devices.

N-7-22. Recognize the differences and relationships among measures of perimeter, area, and volume (capacity) in both systems.

N-7-23. Solve problems involving length, perimeter, area, volume (capacity), weight, mass, and temperature.

N-7-24. Understand units and their relationship to one another and to real world

applications.

II. Geometry:

G-7-1. Precisely describe, classify, and understand relationships among types of one-, two-, and three-dimensional objects using their defining properties.

G-7-2. Apply fundamental concepts, properties, and relationships among points, lines, planes, angles, and shapes.

G-7-3. Identify and plot points on a coordinate plane.

G-7-4. Construct and measure various angles and shapes using appropriate tools.

G-7-5. Recognize and apply congruence, similarities, and symmetry of shapes.

G-7-6. Explore and model the effects of reflections, translations, and rotations on various shapes.

G-7-7. Apply formulas for perimeter, circumference, and area to triangles, quadrilaterals, and circles.

G-7-8. Explore the concept of surface area and volume (capacity).

G-7-9. Explore right triangle geometry.

III. Statistics:

S-7-1. Read and interpret tables, charts, and graphs (scatter plots, line graphs, bar graphs, pie charts).

S-7-2. Explain and justify conclusions drawn from tables, charts, and graphs.

S-7-3. Collect, organize, and display data with appropriate notation in tables, charts, and graphs (scatter plots, line graphs, bar graphs, pie charts).

S-7-4. Understand and use the measures of central tendency—mean, median, and mode with simple sets of data.

S-7-5. Explore the significance of range, frequency, and informal distribution.

S-7-6. Represent a simple set of data in a table, as a graph, and as a mathematical relationship.

S-7-7. Predict, perform, and record results of simple probability experiments.

S-7-8. Recognize equally likely outcomes.

S-7-9. Make predictions based on simple experimental and theoretical probabilities.

IV. Algebra:

A-7-1. Develop an understanding of evaluating mathematical and algebraic expressions using commutative, associative, identity, zero, inverse, distributive, and substitution.

A-7-2. Understand and use the order of operations in evaluating basic algebraic expressions.

A-7-3. Use symbols ($<$, $>$, $=$, $\leq$, $\geq$, not equal) to express relationships.

A-7-4. Develop the use of variables in simple expressions and equations.

A-7-5. Translate simple word statements and story problems into algebraic expressions and equations.

A-7-6. Solve 1-step equations using inverse operations.

A-7-7. Explore solutions of simple 1-step equations using negative numbers.

A-7-8. Explore graphical representation to show simple linear equations.

A-7-9. Extend patterns and identify a rule (function) that generates the pattern using real numbers.

A-7-10. Use patterns and functions to represent and solve problems.

V. Connections:

(1). Realization:

C-7-1. Use appropriate vocabulary of Computation.

C-7-2. Use appropriate vocabulary of Measurement.

C-7-3. Use appropriate vocabulary of Estimate.

C-7-4. Use appropriate vocabulary of Geometry.

C-7-5. Understand and use appropriate vocabulary (of Data Analysis).

C-7-6. Understand and use the language of probability.

C-7-7. Understand and use appropriate vocabulary (of Probability).

C-7-8. Understand and use appropriate vocabulary of Functions.

(2). Transformation:

C-7-9. Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning and concepts.

C-7-10. Select appropriate methods to represent mathematical ideas.

C-7-11. Use functional relationships to explain how a change in one quantity results in a change in another.

(3). Communication:

C-7-12. Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to communicate mathematical information.

C-7-13. Use appropriate vocabulary to communicate mathematical information.

(4). Problem Solving:

C-7-14. Recognize pertinent information for problem solving.

C-7-15. Apply solutions and strategies to new problem situations.

C-7-16. Formulate conjectures and discuss why they must be or seem to be true.

C-7-17. Understand the purpose and capabilities of appropriate technology use as a tool to solve problems.

C-7-18. Use computer applications to display and manipulate data.

8th Grade Math Standards

I. Numbers & Units:

(1). Numbers & Computations:

N-8-1. Read, write, order, and compare real numbers (integers, fractions, decimals, percents, and ratios) and absolute values.

N-8-2. Understand and use real numbers, both rational and irrational.

N-8-3. Show a sense of magnitudes and relative magnitudes of real numbers (whole numbers, fractions, decimals) using scientific notation and exponential numbers.

N-8-4. Develop and display number theory concepts.

N-8-5. Understand the position of rational numbers on a number line.

N-8-6. Consistently and accurately add, subtract, multiply, and divide rational numbers.

N-8-7. Instantly recall common equivalent fractions, decimals, and percents.

N-8-8. Use appropriate notations.

N-8-9. Evaluate numerical expressions using the order of operations.

N-8-10. Select and use an appropriate method of computation from mental math, paper and pencil, calculator or a combination of the 3.

N-8-11. Use a variety of strategies including common mathematical formulas to compute problems drawn form real-world situations.

N-8-12. Understand and use exponents.

N-8-13. Use rates to make indirect measurements.

N-8-14. Understand and use proportions, ratios, and scales.

N-8-15. Use estimation to predict computation results.

N-8-16. Recognize when estimate is appropriate and understand the usefulness of an estimate as distinct from an exact answer.

N-8-17. Determine whether a given estimate is an overestimate or underestimate.

N-8-18. Make predictions and decisions based on information.

(2). Units & Measurements:

N-8-19. Select and use appropriate units and tools to make formal measurements in both systems.

N-8-20. Convert unit of measurement within each system.

N-8-21. Apply estimation of measurement to real-world and content problems using actual measuring devices.

N-8-22. Recognize the differences and relationships among measures of perimeter, area, and volume (capacity) in both systems.

N-8-23. Solve problems involving length, perimeter, area, volume (capacity), weight, mass, and temperature.

N-8-24. Understand units and their relationship to one another and to real world

applications.

II. Geometry:

G-8-1. Precisely describe, classify, and understand relationships among types of one-, two-, and three-dimensional objects using their defining properties.

G-8-2. Understand and apply fundamental concepts, properties, and relationships among points, lines, planes, angles, and shapes.

G-8-3. Construct and measure various angles and shapes using appropriate tools.

G-8-4. Use the coordinate plane as it relates to real-world applications.

G-8-5. Recognize and apply congruence, similarities, and symmetry of shapes.

G-8-6. Explore and model the effects of reflections, translations, and rotations on various shapes.

G-8-7. Apply formulas for perimeter, circumference, and area to polygons and circles.

G-8-8. Understand the concept of surface area and volume (capacity).

G-8-9. Investigate right triangle geometry using the Pythagorean Theorem.

III. Statistics:

S-8-1. Analyze and interpret tables, charts, and graphs (scatter plots, line graphs, bar graphs, pie charts).

S-8-2. Explain and justify conclusions drawn from tables, charts, and graphs.

S-8-3. Collect, organize, and display data with appropriate notation in tables, charts, and graphs (scatter plots, line graphs, bar graphs, pie charts).

S-8-4. Choose and calculate the appropriate measure of central tendency—mean, median, and mode.

S-8-5. Explore the significance of range, frequency, and informal distribution.

S-8-6. Represent a set of data in a table, as a graph, and as a mathematical relationship.

S-8-7. Model situations of probability using simulations.

S-8-8. Recognize equally likely outcomes.

S-8-9. Make predictions based on simple experimental and theoretical probabilities.

IV. Algebra:

A-8-1. Understand and use the following properties in evaluating algebraic expressions using commutative, associative, identity, zero, inverse, distributive, and substitution.

A-8-2. Understand and use the order of operations in evaluating basic algebraic expressions.

A-8-3. Simplify algebraic expressions.

A-8-4. Use symbols ($<$, $>$, $=$, $\leq$, $\geq$, not equal) to express relationships.

A-8-5. Understand and use variables in expressions, equations, and inequalities.

A-8-6. Translate simple word statements and story problems into algebraic expressions and equations.

A-8-7. Solve 1-step and 2-step equations and inequalities using inverse operations.

A-8-8. Explore graphical representation to show simple linear equations.

A-8-9. Extend patterns and identify a rule (function) that generates the pattern using real numbers.

A-8-10. Use patterns and functions to represent and solve problems.

V. Connections:

(1). Realization:

C-8-1. Use appropriate vocabulary of Computation.

C-8-2. Use appropriate vocabulary of Measurement.

C-8-3. Use appropriate vocabulary of Estimate.

C-8-4. Use appropriate vocabulary of Geometry.

C-8-5. Understand and use appropriate vocabulary (of Data Analysis).

C-8-6. Understand and use the language of probability.

C-8-7. Understand and use appropriate vocabulary (of Probability).

C-8-8. Understand and use appropriate vocabulary of Functions.

(2). Transformation:

C-8-9. Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning and concepts.

C-8-10. Select appropriate methods to represent mathematical ideas.

C-8-11. Use functional relationships to explain how a change in one quantity results in a change in another.

(3). Communication:

C-8-12. Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to communicate mathematical information.

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(4). Problem Solving:

C-8-14. Recognize pertinent information for problem solving.

C-8-15. Apply solutions and strategies to new problem situations.

C-8-16. Formulate conjectures and discuss why they must be or seem to be true.

C-8-17. Understand the purpose and capabilities of appropriate technology use as a tool to solve problems.

C-8-18. Use computer applications to display and manipulate data.